

**AMENDMENTS TO THE CLAIMS**

1-44. (Canceled)

45. (Currently Amended) A method of screening for a substance capable of operating ~~an aberrant receptor being a receptor a~~  $\beta$  3 adrenergic receptor with a mutation in the structural gene resulting in substantially changed affinity for the natural ligand, ~~which method comprises comprising the steps of:~~

- (a) expressing ~~an aberrant genetic product~~ the  $\beta$  3 adrenergic receptor by gene engineering technology;
- (b) bringing the ~~aberrant receptor~~  $\beta$  3 adrenergic receptor obtained in step (a) into contact with a subject substance; and
- (c) assaying the operation activity of said substance on said  $\beta$  3 adrenergic receptor.

46. (Currently Amended) The method according to claim 45, wherein the ~~aberrant receptor~~  $\beta$  3 adrenergic receptor with a mutation in the structural gene causes a disease due to the substantial change in the affinity of said natural ligand, which method further comprises:

- (d) selecting ~~an~~ a substance that is an agonist or antagonist of the ~~aberrant receptor~~  $\beta$  3 adrenergic receptor.

47. (Currently Amended) The method of claim 45 which is suitable for screening for a drug capable of ~~for~~ restoring normal function to a signal transduction system of a cell having ~~an aberrant receptor a~~  $\beta$  3 adrenergic receptor of a mammal suffering from a disease caused by the  $\beta$  3 adrenergic receptor, ~~which method comprises wherein step (C) further comprises~~

- ~~(e) assaying the activity of said substance on said receptor and wherein the activity is an activity~~ selecting a substance that restores the normal function of the cell-, thereby identifying a drug capable of

48. (Currently Amended) The method according to claim 45, which is suitable for identifying a drug for treatment of a disease caused by an aberrant the  $\beta$ 3 adrenergic receptor,<sub>;</sub> ~~which method comprises~~

~~(e) assaying the activity of said substance on said product and preparing a substance judged to substantially operate the signal transduction system of a cell having the aberrant receptor wherein said activity is activity that restores wild-type activity of the receptor.~~

49. (Currently Amended) The method according to claim 45, which is suitable for identifying a substance for treatment of a disease caused by an aberrant receptor the  $\beta$ 3 adrenergic receptor,<sub>;</sub> ~~which method comprises~~

~~(e) assaying the activity of said substance on the aberrant receptor and preparing a substance judged to substantially operate the signal transduction system of a cell having the aberrant receptor, wherein said activity is activity that restores wild-type activity to the receptor.~~

50. (Currently Amended) The method according to claim 47 or 49, wherein the aberrant  $\beta$ 3 adrenergic receptor is an aberrant a  $\beta$ 3 adrenergic receptor prepared by expressing in a recombinant cell the gene encoding the aberrant  $\beta$ 3 adrenergic receptor.

51. (Currently Amended) The method according to claim 50 wherein the gene encoding the aberrant  $\beta$ 3 adrenergic receptor is an aberrant  $\beta$ 3 adrenergic receptor encoding gene specified identified by comparative analysis of a genes ~~prepared~~ from a cell of a mammal suffering from a disease caused by the aberrant a  $\beta$ 3 adrenergic receptor, and a gene prepared from a cell of a mammal of the same species that does not carry the aberrant receptor.

52. (Currently Amended) The method according to claim 45 which is suitable for screening for an agonist or antagonist ~~of to an aberrant~~ a  $\beta$ 3 adrenergic receptor and which comprises the steps of:

expressing in a cell the gene encoding the ~~aberrant~~  $\beta$ 3 adrenergic receptor, ~~separating the aberrant receptor, providing~~ contacting said cell with a substance ~~with the aberrant receptor~~ and determining operational activity of said substance as on said receptor.

53. (Previously Presented) The method according to claim 52, wherein the substance is a substance that normally operates said receptor.

54. (Previously Presented) The method according to claim 45, wherein the operation activity is a change in intracellular concentrations of responding substances selected from cAMP, inositol phosphate and calcium ion.

55. (Canceled)

56. (Canceled)

57. (Currently Amended) The method of claim ~~56~~45, wherein the  $\beta$ 3 adrenergic receptor ~~is the Trp64Arg variant~~ is the human  $\beta$ 3 adrenergic receptor with a Trp substituted for the Arg at position 64.